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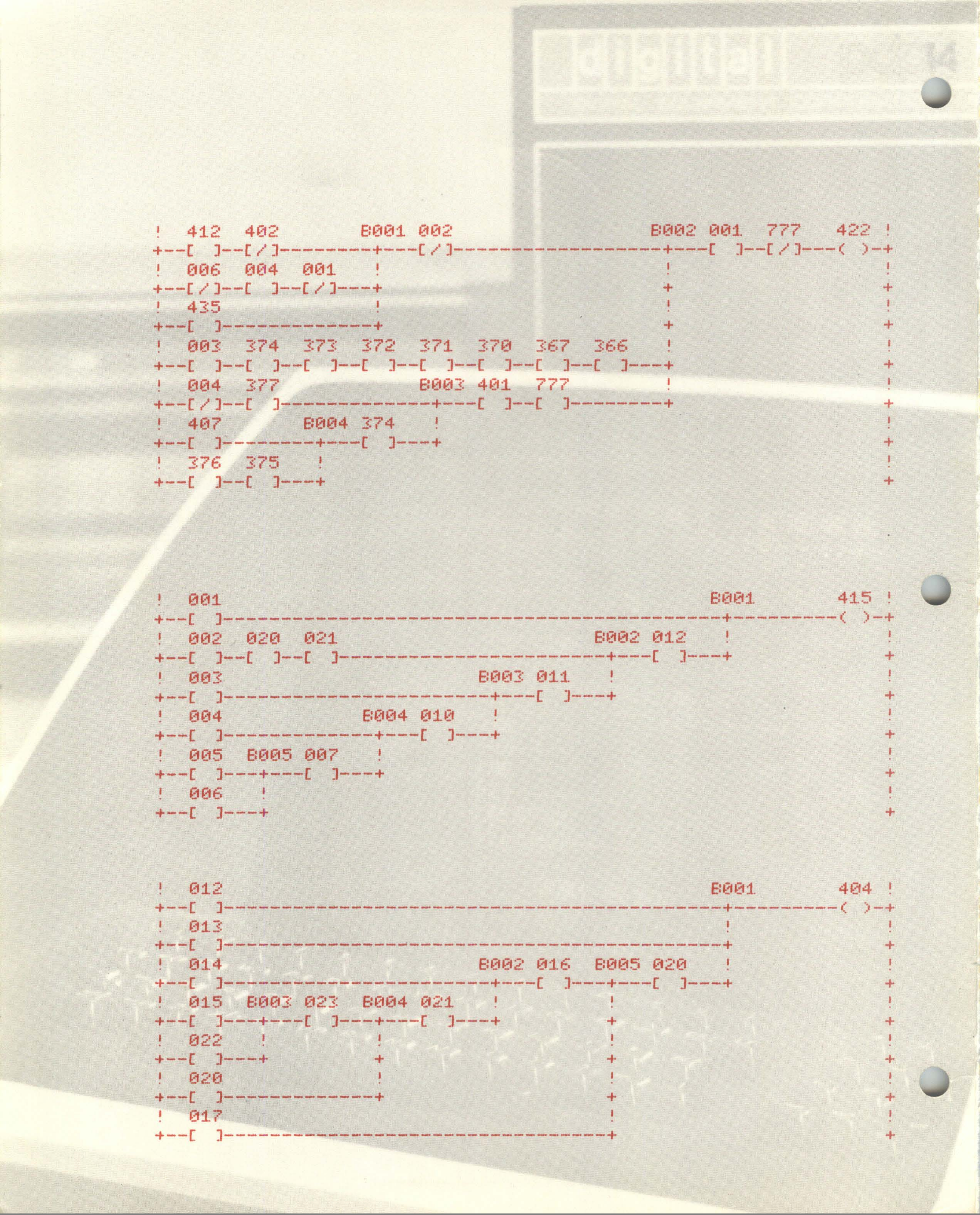
CRT-14
CONTROL RELAY TRANSLATOR

INDUSTRIAL CONTROL PRODUCTS

digital



```
!  412  402       B001 002                 B002 001  777   422 !
+--[ ]--[/]--------+---[/]------------------+---[ ]--[/]---( )-+
!  006  004  001   !                        !                  !
+--[/]--[ ]--[/]---+                        +                  +
!  435             !                        !                  !
+--[ ]-------------+                        +                  +
!  003  374  373  372  371  370  367  366   !                  !
+--[ ]--[ ]--[ ]--[ ]--[ ]--[ ]--[ ]--[ ]---+                  +
!  004  377            B003 401  777        !                  !
+--[/]--[ ]-------------+---[ ]--[ ]--------+                  +
!  407       B004 374   !                                      !
+--[ ]--------+---[ ]---+                                      +
!  376  375   !                                                !
+--[ ]--[ ]---+                                                +
```

```
!  001                                          B001       415 !
+--[ ]-------------------------------------------+---------( )-+
!  002  020  021                      B002 012   !             !
+--[ ]--[ ]--[ ]-----------------------+---[ ]---+             +
!  003                      B003 011   !                       !
+--[ ]-----------------------+---[ ]---+                       +
!  004            B004 010   !                                 !
+--[ ]-------------+---[ ]---+                                 +
!  005  B005 007   !                                           !
+--[ ]---+---[ ]---+                                           +
!  006   !                                                     !
+--[ ]---+                                                     +
```

```
!  012                                          B001       404 !
+--[ ]-------------------------------------------+---------( )-+
!  013                                           !             !
+--[ ]-------------------------------------------+             +
!  014                      B002 016  B005 020   !             !
+--[ ]-----------------------+---[ ]---+---[ ]---+             +
!  015  B003 023  B004 021   !         !                       !
+--[ ]---+---[ ]---+---[ ]---+         +                       +
!  022   !         !                   !                       !
+--[ ]---+         +                   +                       +
!  020             !                   !                       !
+--[ ]-------------+                   +                       +
!  017                                 !                       !
+--[ ]---------------------------------+                       +
```

Programmable controllers have become widely used and accepted in industry. As a result two basic methods have developed for expressing the control sequence—boolean equations and ladder diagrams. Digital Equipment Corporation's aim is to give the user the ability to choose either method for implementing the PDP-14 Programmable Controller. The computer aided software provided by Digital Equipment Corporation for use in developing PDP-14 programs in boolean equations is well known. Digital now provides a new technique for PDP-14 program preparation. This development is known as CRT-14.

CRT-14 allows the user to program a PDP-14 from ladder diagrams. The control engineer merely enters information into a CRT terminal or Teletype keyboard using familiar relay symbology. CRT-14 provides the user with the ability to completely edit his program, display the results, and generate hard copy of the program in ladder diagram form. Once the user has debugged his program, CRT-14 provides a tape from which the PDP-14 Programmable Controller memory is made. It's that easy.

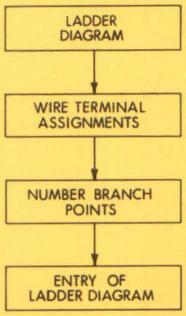
CRT-14 Features

1. Uses ladder diagrams to develop PDP-14 program.
2. Provides visual display of control circuits.
3. Provides hard-copy documentation of complete program in ladder diagram form.
4. Complete editing capability included.
5. Visual verification of changes as they are made.
6. Run equipment on-line before final memory is prepared.
7. Provides the tape from which memory is made.
8. No machine language required to program.
9. Operates on Teletype and/or CRT terminal with any PDP-8 family computer.
10. Handles up to 255 outputs.
11. Maximum of 110 input contacts, output contacts, and branch point combinations per output.
12. Provided free of charge with PDP-14 system.

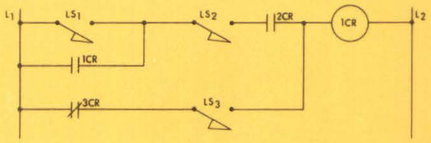
Design Rules

1. One output circuit may contain up to 10 lines, each line containing a combination of 11 input contacts, output contacts and branch points.
2. The same contact may be used in as many circuits as necessary.
3. All branch paths must return to L1 (AC line or DC Supply).
4. All branch points (origin of a branch) must be numbered.
5. All inputs wired to PDP-14 terminals are numbered 0-377 octal (no eight's or nine's). All outputs wired to PDP-14 terminals are numbered 400-777 octal (no eight's or nine's).

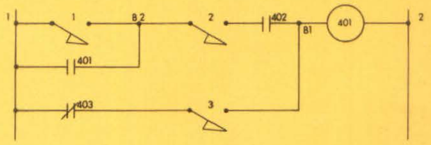
PROGRAMMING WITH CRT-14



INPUTS	*TERMINAL #*
LS_1	1
LS_2	2
LS_3	3



OUTPUTS	*TERMINAL #*
1CR	401
2CR	402
3CR	403



YOU TYPE :	*DESCRIPTION OF ITEM*
L1	(Reference AC line or DC supply)
—| |— 1	(N/O input #1)
B2	(Branch point 2)
L1	(Reference AC line or DC supply)
—| |— 401	(N/O contact #401)
B2	(Branch point 2)
—| |— 2	(N/O input #2)
—| |— 402	(N/O output #402)
B1	(Branch point 1)
L1	(Reference AC line or DC supply)
—|/|— 403	(N/C output #403)
—| |— 3	(N/O input #3)
B1	(Branch point 1)
—( )— 401	(Output driver 401—end of circuit)
↲	(Carriage return)
E L	(Display complete ladder diagram)

KEYBOARD SYMBOLS

SYMBOL	*REPRESENTS*
L1	Line 1 (AC line or DC supply)
B	Branch Point
—| |—	Normally open contact
—|/|—	Normally closed contact
—( )—	Output driver (end of circuit)

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